



# Effect Of Environmental Education Package On Environmental Awareness And Environmental Behaviour Among Secondary School Students

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## Abstract

**“One of the first conditions of happiness is that the link between man and nature shall not be broken.” - Leo Tolstoy.**

**Keywords:** Environmental Education (EE) Package, Environment Awareness, Environment Behaviour, Value Action Gap, Quasi-Experiment, Pro-environment action

This research investigates the effectiveness of a specialised Environmental Education (EE) Package in enhancing environmental awareness and behaviour among secondary school students in Anand, Gujarat, with a specific focus on the "value-action gap," where knowledge often fails to translate into sustainable habits. Utilising a quasi-experimental pre-test/post-test design with 100 students, the study compared a traditional lecture-based control group against an experimental group exposed to a multi-sensory 15-day intervention. This EE Package integrated multimedia presentations, hands-on activities, and cultural storytelling from the *Ramayana* and *Bhagavad Gita* to foster stewardship. The results demonstrated a statistically significant improvement in both awareness and pro-environmental actions in the experimental group, which significantly outperformed the control group. Furthermore, a strong positive correlation of 0.91 was found between awareness and behaviour, indicating that the package effectively translated ecological knowledge into practical action regardless of student gender.

## 1. Introduction

Environmental degradation is often rooted in ignorance and poor environmental campaigns. While education is a key factor in increasing awareness, a "value-action gap" persists, in which increased knowledge does not always translate into pro-environmental behaviour.

The escalating global environmental crisis—marked by rapid climate change, biodiversity loss, and resource depletion—demands an urgent shift in human attitudes and actions. Environmental Education (EE) has emerged as a critical tool for this transformation, moving beyond the simple delivery of facts to foster a deeper understanding of the interconnections between human societies and the natural world. For secondary school students, who are at a formative stage of developing lifelong values, EE is essential for cultivating a sense of stewardship and responsibility.

## 2. The Role of Environmental Awareness

Environmental awareness represents more than just biological or ecological knowledge; it is an individual's concern for the environment, translated into a readiness to act. Research indicates that while many secondary students possess a basic understanding of environmental issues, there is often a significant gap between their theoretical knowledge and their actual commitment to conservation. Factors such as school atmosphere, family background, and media exposure play vital roles in shaping this awareness.

## 3. Transitioning to Environmental Behaviour

The ultimate goal of any educational intervention is to influence environmental behaviour—the adoption of sustainable daily habits such as waste reduction, energy conservation, and responsible consumption. Studies have shown that structured Environmental Education Packages—utilising interactive tools such as PPTs and hands-on activities—can significantly improve these outcomes compared to traditional lecture-based methods. By providing students with practical problem-solving skills, these packages empower them to act as agents of change within their families and communities.

## 4. Research Objectives

- **To develop and implement** an Environmental Education (EE) Package specifically tailored for secondary school students, focusing on local and global ecological issues.
- **To determine the effectiveness** of the Environmental Education Package by comparing the post-test scores of environmental awareness between the experimental group (exposed to the package) and the control group (traditional teaching).
- **To evaluate the impact** of the Environmental Education Package on the environmental behaviour of students, comparing the experimental and control groups after the intervention.
- **To examine the relationship** between environmental awareness and environmental behaviour among students to see if increased knowledge directly translates into action.

## 5. Research Hypotheses

H01: There is no significant difference between the mean pre-test and post-test scores of environmental awareness among students in the experimental group.

H02: There is no significant difference between the mean pre-test and post-test scores of environmental behaviour among students in the experimental group.

H03: There is no significant difference in the post-test scores of environmental awareness between the experimental group (using the EE package) and the control group (traditional method).

H04: There is no significant difference in the post-test scores of environmental behaviour between the experimental group (using the EE package) and the control group (traditional method).

H05: There is no significant difference in the effectiveness of the Environmental Education Package based on gender (male vs. female).

H06: There is no significant correlation between the students' environmental awareness and behaviour scores after the intervention.

The research methodology for this study follows a structured quantitative approach to evaluate the impact of the Environmental Education (EE) Package. Below is the detailed plan.

## 6. Research Design

This study employs a quasi-experimental design, specifically the Pre-test Post-test Control Group Design. This involves the Experimental Group receiving the Environmental Education Package intervention. The control group continues with the traditional teaching method (lecture-based). The population of the present study includes all secondary school students in the Anand district of Gujarat. Purposive sampling techniques were applied to deliver the EE package for the present research. Two classes of standard nine selected from D N High School, Anand, to deliver an EE package. Two groups were made equal based on their previous year's results. Choosing one class, 9th A, as the control group and another class, 9th B, as the experimental group. There were 25 boys and 25 girls who participated in traditional teaching. There were 25 boys and 25 girls who participated in the experimental group. Typically, it involves 100 students to ensure statistical significance.

## 7. Research Tools

The study utilises two primary standardised or self-developed instruments:

- **Environmental Awareness Scale:** 48-item questionnaire measuring knowledge on issues like pollution, conservation, and climate change.
- **Environmental Behaviour Scale:** 45 statements concern a Likert-type scale or rating scale designed to measure pro-environmental actions.

### The Intervention (EE Package)

#### Environmental Education Package (EEP): Includes

- **Environmental Games:** Interactive activities designed to teach ecological concepts through play.
- **Environmental Awareness Videos/Clips:** Visual media to showcase environmental issues and solutions.
- **Environmental Awareness Activities:** Hands-on tasks to engage students with nature.
- **Skit/Short Plays Testing Environmental Knowledge and Understanding:**

Performance-based learning is used to evaluate how well students grasp environmental concepts.

- **Environmental Awareness Fieldwork:** Outdoor excursions to study local ecosystems firsthand.
- **Environmental Group Discussion (Climate Change):** Collaborative dialogues focusing specifically on the impact and mitigation of climate change.
- **Understanding the Three R's:** Lessons on the core principles of sustainability: Reduce, Reuse, and Recycle.
- **Stories from the Bhagavad Gita and Ramayana:** Using traditional Indian epics to highlight spiritual and cultural connections to nature.

- **Environmental Awareness PowerPoint Presentation:** Visual slideshows to deliver structured information and data.
- **Poster Making:** Creative sessions for students to express environmental messages through art.

The package is an active learning module that includes:

- Multimedia presentations (PPTs, videos). Experiential activities such as hands-on recycling projects and lab experiments. Problem-solving workshops and interactive group discussions. Poster presentations and environmental games like Who Am I. The researcher used storytelling to inculcate the nature from the Epic Ramayana and Mahabharata.

**8. Procedure:** Pre-test, administer awareness and behaviour scales to both groups to establish a baseline. Implementation of the EE Package to the experimental group over a set period (e.g., 15 days), while the control group follows the standard curriculum. Post-test: Re-administer the same tools to both groups after the intervention.

### Data Analysis

Collected data will be analysed using statistical software like SPSS. Mean and Standard Deviation to summarise scores. t-test to compare pre-test and post-test scores within groups. An independent t-test to compare the results between the experimental and control groups. Pearson Correlation to examine the link between awareness and behaviour.

### 9. Interpretations

H01: There is no significant difference between the mean pre-test and post-test scores of environmental awareness among students in the experimental group.

The

Significant difference between the mean pre-test and post-test scores of environmental awareness among students in the experimental group.						
Environmental Awareness	Numbers	Mean	Standard Deviation	t value	t table	Significance
Pre-test Experimental Group	50	71.43	10.45	11.64	1.96(0.05) 2.58(0.01)	Significant at the 0.01 level
Post-test Experimental Group	50	96.66	11.21			
<b>Total</b>	<b>100</b>					

intervention significantly improved students' awareness. The mean score rose from 71.43 (pre-test) to 96.66 (post-test). With a t-value of 11.64, the difference is statistically significant at the 0.01 level.

H02: There is no significant difference between the mean pre-test and post-test scores of environmental behaviour among students in the experimental group.

Significant difference between the mean pre-test and post-test scores of environmental behaviour among students in the experimental group.						
Environmental Behaviour	Numbers	Mean	Standard Deviation	t value	t table	Significance
Pre-test Experimental Group	50	74.56	10.21	12.81	1.96(0.05) 2.58(0.01)	Significant at the 0.01 level
Post-test Experimental Group	50	102.33	11.43			
<b>Total</b>	<b>100</b>					

Students' daily habits also saw a marked improvement, with mean scores increasing from 74.56 to 102.33. The t-value of 12.81 indicates this progress is highly significant at the 0.01 level.

H03: There is no significant difference in the post-test scores of environmental awareness between the experimental group (using the EE package) and the control group (traditional method).

Significant difference in the post-test scores of environmental awareness between the experimental group (using the EE package) and the control group (traditional method).						
Environmental Awareness	Numbers	Mean	Standard Deviation	t value	t table	Significance
Post -test Control Group	50	81.34	12.22	6.53	1.96(0.05) 2.58(0.01)	Significant at the 0.01 level
Post-test Experimental Group	50	96.66	11.21			
<b>Total</b>	<b>100</b>					

The group using the Environmental Education (EE) Package performed significantly better than the group using traditional methods. The experimental group achieved a mean of 96.66 compared to the control group's 81.34 (t-value: 6.53)

H04: There is no significant difference in the post-test scores of environmental behaviour between the experimental group (using the EE package) and the control group (traditional method).

Significant difference in the post-test scores of environmental behaviour between the experimental group (using the EE package) and the control group (traditional method).						
Environmental Behaviour	Numbers	Mean	Standard Deviation	t value	t table	Significance
Post -test Control Group	50	83.56	11.67	7.27	1.96(0.05) 2.58(0.01)	Significant at the 0.01 level
Post-test Experimental Group	50	102.33	11.43			
<b>Total</b>	<b>100</b>					

Similarly, the experimental group showed superior environmental behaviour with a mean of 102.33, while the control group averaged 83.56. This difference (t-value: 7.27) is statistically significant.

H05: There is no significant difference in the effectiveness of the Environmental Education Package based on gender (male vs. female).

Significant difference in the effectiveness of the Environmental Education Package based on gender (Boys & Girls).						
Environmental Education Package	Numbers	Mean	Standard Deviation	t value	t table	Significance
Boys Score	25	38.45	5.32	1.43	1.96(0.05) 2.58(0.01)	Not Significant
Girls Score	25	40.43	4.44			
<b>Total</b>	<b>50</b>					

The EE package was effective for both genders. While girls had a slightly higher mean score (40.43) than boys (38.45), the t-value of 1.43 was below the table value, meaning there is no significant difference in effectiveness based on gender.

H06: There is no significant correlation between the students' environmental awareness and behaviour scores after the intervention.

Significant correlation between the students' environmental awareness and behaviour scores after the intervention.				
Correlation	Number	Calculated correlation	Table value of correlation	Result
Environmental Awareness	50	0.91	r=1 Total correlation	Very close positive correlation
Environmental Behaviour				

There is a very strong positive correlation ( $r = 0.91$ ) between students' environmental awareness and their behaviour. This suggests that as their knowledge and awareness increased, their pro-environmental actions increased almost proportionally.

## 10. Findings

- Pre-test mean of 71.43 to a post-test mean of 96.66. This proves the package effectively builds ecological knowledge.
- Improvement in Sustainable Behaviour: Students didn't just learn; they changed their actions. Behaviour scores rose from 74.56 to 102.33, indicating an increase in habits like waste reduction and energy conservation.
- Superiority Over Traditional Methods: When compared to the control group (which used traditional lectures), the experimental group scored significantly higher in both awareness (96.66 vs. 81.34) and behaviour (102.33 vs. 83.56).
- Universal Effectiveness: The package worked equally well for all students regardless of gender. While girls scored slightly higher than boys, the difference was not statistically significant.
- Direct Link Between Knowledge and Action: The study found a very strong positive correlation (0.91) between awareness and behaviour. This suggests that as students' understanding of environmental issues grew, their commitment to pro-environmental actions increased accordingly.

## 11. Conclusion

The researchers concluded that interactive modules—including PPTs, games, fieldwork, and stories from Indian epics like the Ramayana and Mahabharata—are essential for bridging the "value-action gap" in environmental education.

## References:

1. Garrett, H. E. (1966). *Statistics in psychology and education* (6th ed.). Vakils, Feffer and Simons.
2. Kanazawa, M. (2023). *Research methods for environmental studies: A social science approach* (2nd ed.). Routledge.
3. Krasny, M. E. (2020). *Advancing environmental education practice*. Cornell University Press.
4. Kurisu, K. (2016). *Pro-environmental behaviours*. Springer Japan. doi.org
5. Morrell, P. D., & Carroll, J. B. (2010). *Conducting educational research: A primer for teachers and administrators*. Brill.
6. Narayan, R. K. (Trans.). (2006). *The Ramayana*. Penguin Classics. (Original work published ca. 5th century BCE).
7. Nilgiri Press (Ed.). (2007). *The Bhagavad Gita* (E. Easwaran, Trans.; 2nd ed.). Nilgiri Press.
8. Singh, A., Padwar, G. K., & Lal, J. (2025). *Environmental education principles and practices*. Book Rivers.
9. Steg, L., & de Groot, J. I. M. (Eds.). (2018). *Environmental psychology: An introduction* (2nd ed.). John Wiley & Sons.
10. Whitley, B. E., Kite, M. E., & Adams, H. L. (2013). *Principles of research in behavioural science* (3rd ed.). Routledge.

